

## Ontario's Great Lakes Guardian Research and Monitoring Vessel

The Great Lakes Guardian is a research vessel that Ministry of Environment scientists use to monitor conditions and gather data to help preserve the Great Lakes.

Built in Ontario, the Guardian has the capacity to support a crew of eight, including scientists, an ecologist, a surface water specialist, and a stream monitoring field technician. The vessel is equipped with an onboard laboratory and state-of-the-art equipment – samplers, underwater video, computer modelling programs, and sensors. These instruments provide either a snapshot, or real-time information about water, sediment, and aquatic life.

Field data is collected regularly through the ice-free season, generally April to December. Rain or shine. The vessel travels from the St. Lawrence River, downstream of Lake Ontario, to the far north of Lake Superior collecting valuable and reliable data.

This summer the Guardian will be:

- In Lake Ontario doing baseline water tests at sites that are part of the Great Lakes Index Station Network. This network of 60 sites across the lakes provides information on how water quality conditions are changing over time.
- Sampling water quality along the urbanized parts of Lake Ontario's shorelines and tributaries to explore the role zebra and quagga mussels, both aquatic invasive species, play in the growth of nuisance algae. This will include underwater video.
- In the western end of Lake Erie where the focus will be on the blue-green algae blooms that occur in late summer and fall. This is all part of an effort to track down sources of contaminants that contribute to this increasingly large-scale problem.

The scientific information collected is essential for detecting changes in the conditions of the lakes, identifying the causes of problems and identifying emerging problems. The information is also used to develop new protection measures and to track and report on progress in improving and protecting water resources.

The Guardian is big enough to handle the rough conditions that can occur on the Great Lakes but still small enough to be easily moved between ports on the highway. The Guardian is used in deep open waters, in shallower water close to shore, and in the inter-connecting rivers between the Great Lakes. The vessel can manoeuvre at depths as shallow as one metre and typically operates from the shoreline to distances of two to three kilometres offshore. This nearshore zone is critical to the aquatic ecosystem and is also where the drinking water intakes and where municipal and industrial wastewater discharges are situated.

Great Lakes Guardian statistics:

- Constructed 2002 by Hike Metal, Wheatley, Ontario.
- Length 38 ft (11.49m)
- Beam (width) 11 ft (3.42m)
- Cruising speed 25 knots (46 km/h)

The Guardian is not the only provincial research vessel on the Great Lakes. The Ministry of the Environment also operates the Monitor VI, a smaller craft with similar research and monitoring features and capabilities. Eight vessels operated by the Ministry of Natural Resources conduct fisheries assessment and research in lakes Superior, Huron, Erie and Ontario.